SUPPLEMENTARY MATERIAL

Trace elements in river waters and sediments before and after a mining dam breach (Bento Rodrigues, Brazil)

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Table 1S. Operational conditions and parameters of ICP-MS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nebulizer spray chamber</td>
<td>Cyclonic glass</td>
</tr>
<tr>
<td>Nebulizer</td>
<td>Meinhard concentric. Type C</td>
</tr>
<tr>
<td>RF power (W)</td>
<td>1500</td>
</tr>
<tr>
<td>Plasma gas flow rate (L min(^{-1}))</td>
<td>16</td>
</tr>
<tr>
<td>Auxiliary gas flow rate (L min(^{-1}))</td>
<td>1.10</td>
</tr>
<tr>
<td>Nebulizer gas flow rate (L min(^{-1}))</td>
<td>1.02</td>
</tr>
<tr>
<td>Replicates</td>
<td>3</td>
</tr>
<tr>
<td>Isotopes</td>
<td>$^{75}$As, $^{111}$Cd, $^{59}$Co, $^{52}$Cr, $^{63}$Cu, $^{60}$Ni, $^{208}$Pb and $^{66}$Zn</td>
</tr>
</tbody>
</table>
### Table 2S. BCR protocol

<table>
<thead>
<tr>
<th>Shaking</th>
<th>Time (h)</th>
<th>Temp. (°C)</th>
<th>Vol. (mL)a</th>
<th>Extractants</th>
<th>Fraction</th>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 rpm</td>
<td>16</td>
<td>22 ± 5</td>
<td>32</td>
<td>CH₃COOH 0.11 mol L⁻¹</td>
<td>Exchangeable and acid-soluble</td>
<td>1</td>
</tr>
<tr>
<td>40 rpm</td>
<td>16</td>
<td>22 ± 5</td>
<td>32</td>
<td>NH₂OH.HCl 0.5 mol L⁻¹ (pH 1.5)b</td>
<td>Reducible</td>
<td>2</td>
</tr>
<tr>
<td>Occasional</td>
<td>1</td>
<td>22 ± 5</td>
<td>8</td>
<td>H₂O₂ 8.8 mol L⁻¹ (pH 2)b</td>
<td>Oxidizable</td>
<td>3</td>
</tr>
<tr>
<td>Occasional</td>
<td>1</td>
<td>80 ± 5</td>
<td>8</td>
<td>H₂O₂ 8.8 mol L⁻¹ (pH 2)b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 rpm</td>
<td>16</td>
<td>22 ± 5</td>
<td>40</td>
<td>NH₄OAc 1 mol L⁻¹ (pH 2)b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microwave digestion</td>
<td>12</td>
<td>Aqua regia (HCl/HNO₃, 3:1)</td>
<td>Residual</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Related to sample weight of 0.8 g.
b pH values adjusted with concentrated nitric acid.

### Table 3S. Analytical figures of merit for the quantitative determination of As, Cd, Co, Cr, Cu, Ni, Pb and Zn by ICP-MS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Isotopes</th>
<th>⁷⁵As</th>
<th>¹¹¹Cd</th>
<th>⁵⁹Co</th>
<th>⁵²Cr</th>
<th>⁶³Cu</th>
<th>⁶⁰Ni</th>
<th>²⁰⁸Pb</th>
<th>⁶⁶Zn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit of detectiona (μg L⁻¹)</td>
<td></td>
<td>0.07</td>
<td>0.03</td>
<td>0.01</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
<td>0.04</td>
<td>0.09</td>
</tr>
<tr>
<td>Limit of quantificationb (μg L⁻¹)</td>
<td></td>
<td>0.21</td>
<td>0.09</td>
<td>0.03</td>
<td>0.15</td>
<td>0.21</td>
<td>0.24</td>
<td>0.12</td>
<td>0.27</td>
</tr>
<tr>
<td>Linear correlation coefficient (r)</td>
<td></td>
<td>0.999</td>
<td>0.998</td>
<td>0.999</td>
<td>0.998</td>
<td>0.999</td>
<td>0.999</td>
<td>0.998</td>
<td>0.999</td>
</tr>
<tr>
<td>Calibration range (μg L⁻¹)</td>
<td></td>
<td>0.1–100</td>
<td>0.1–100</td>
<td>0.1–100</td>
<td>0.1–100</td>
<td>0.1–100</td>
<td>0.1–100</td>
<td>0.1–100</td>
<td></td>
</tr>
<tr>
<td>Measurement precisionc (%)</td>
<td></td>
<td>1.2</td>
<td>1.7</td>
<td>1.1</td>
<td>1.5</td>
<td>1.9</td>
<td>1.4</td>
<td>1.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

a LOD = three times the average of the standard deviation of ten blanks divided by the slope of analytical curve.
b LOQ = 3 × LOD.
c Coefficient of variation obtained from n = 10 measurements of a standard solution containing 10 μg L⁻¹ of each element.